



Intel® Software Development Products
for Intel Platforms and Technologies

Intel® VTune™ Performance Analyzer

Overview

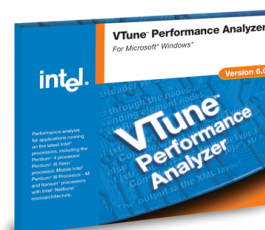
The Intel® VTune™ Performance Analyzer allows you to identify software and hardware performance bottlenecks. The VTune analyzer collects, analyzes, and displays performance data from the system-wide view down to a specific function instruction in your application.

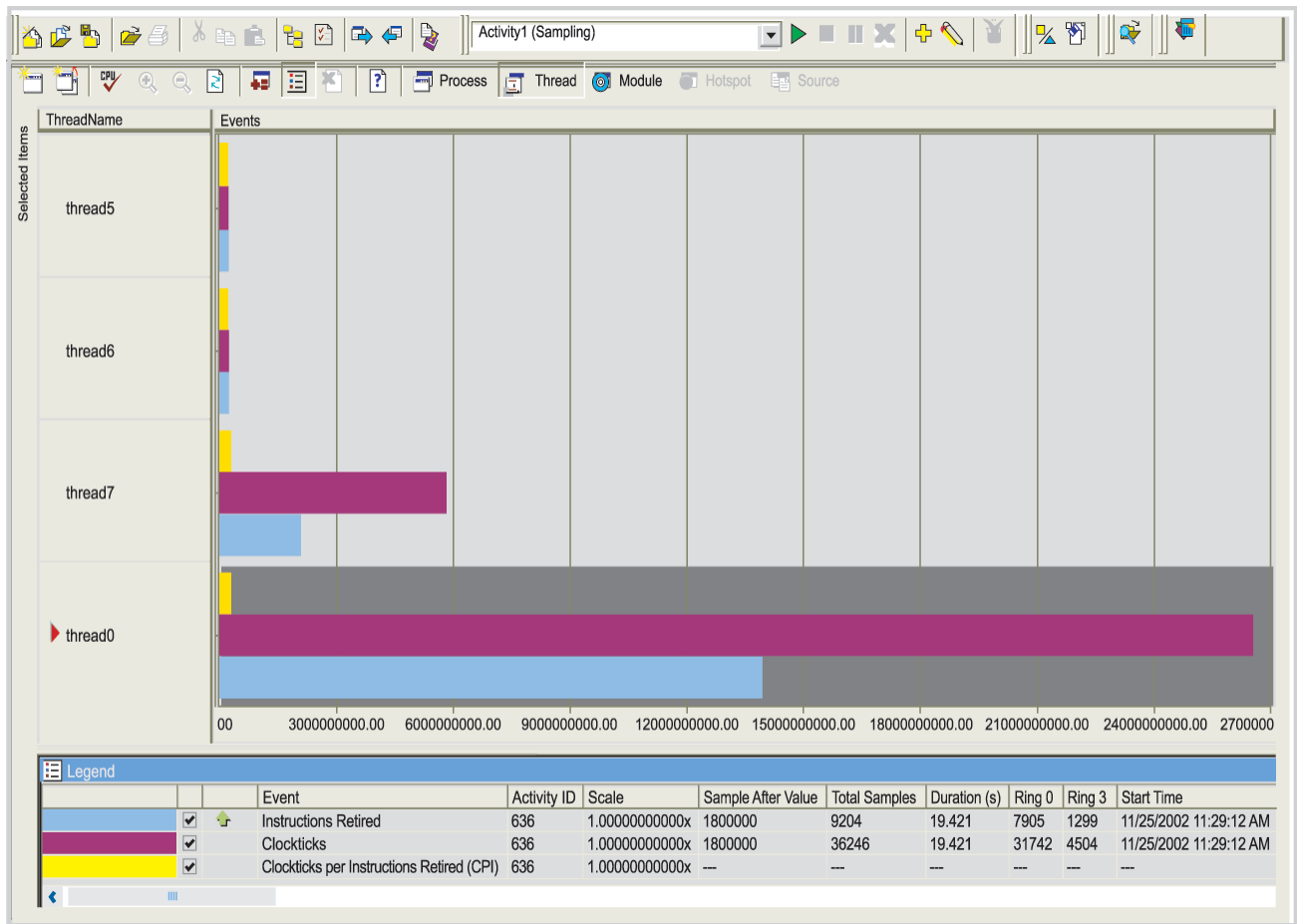
Customer Benefits

- Sampling — time-based sampling allows you to identify the code that is taking the most execution time. Event-based sampling helps identify micro-architectural bottlenecks in your code. Both time- and event-based sampling are easy to use and have very low performance overhead.
- Call Graph — provides you with important information such as the number of calls, the time spent in each function, the time each function spends blocked, and the critical path.
- Counter Monitor — displays the values of hardware and software performance counters, enabling you to track system activity at runtime.
- Intel Tuning Assistant — examines how your application interacts with the system and provides processor-specific advice to help you optimize your code.
- Multi-Threading /Multi-Processor Support — enables you to view sampling data per thread or per processor. Call graph can also show performance data for the different threads in your application.
- Remote System Collection of Performance Data — allows you to configure, start, and stop, or profile a computer remotely. Remote agents are currently available for Windows* operating systems.

Understand and Improve Software Performance

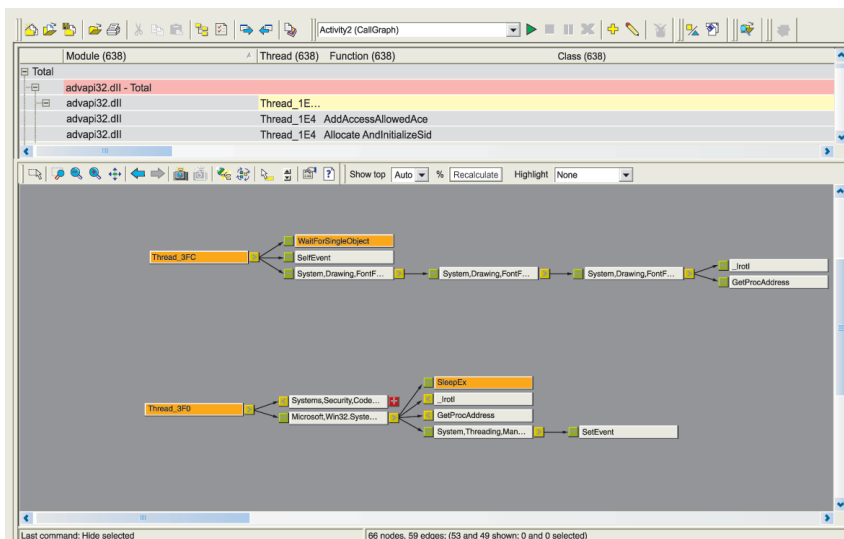
- Supports the Intel Pentium® 4, Intel Xeon™, Itanium® 2, Mobile Pentium III Processor - M, Mobile Pentium 4 Processor - M, and PXA250 processors
- Integrates with the Microsoft Visual Studio .NET* development environment
- Remote Microsoft Windows* operating system profiling
- Multithreaded Analysis
- Direct Multiple Run comparisons
- Simultaneous sampling of multiple events
- Real-time display using Counter Monitor
- Flexible navigation between views
- Available in trial version





Sampling

The VTune™ Performance Analyzer allows you to identify performance bottlenecks in your code by graphically displaying an instruction address histogram of your program's execution. Time-based sampling uses an operating system timer to trigger sampling interrupts. Event-based sampling (EBS) uses processor performance counter overflow to trigger sampling interrupts. Some of the events you can measure with EBS are cache misses and mispredicted branches. After you have collected sampling data, you can view it by process, thread, module, function, or instruction address. Sampling has a very low performance overhead and requires no modification of your code.¹

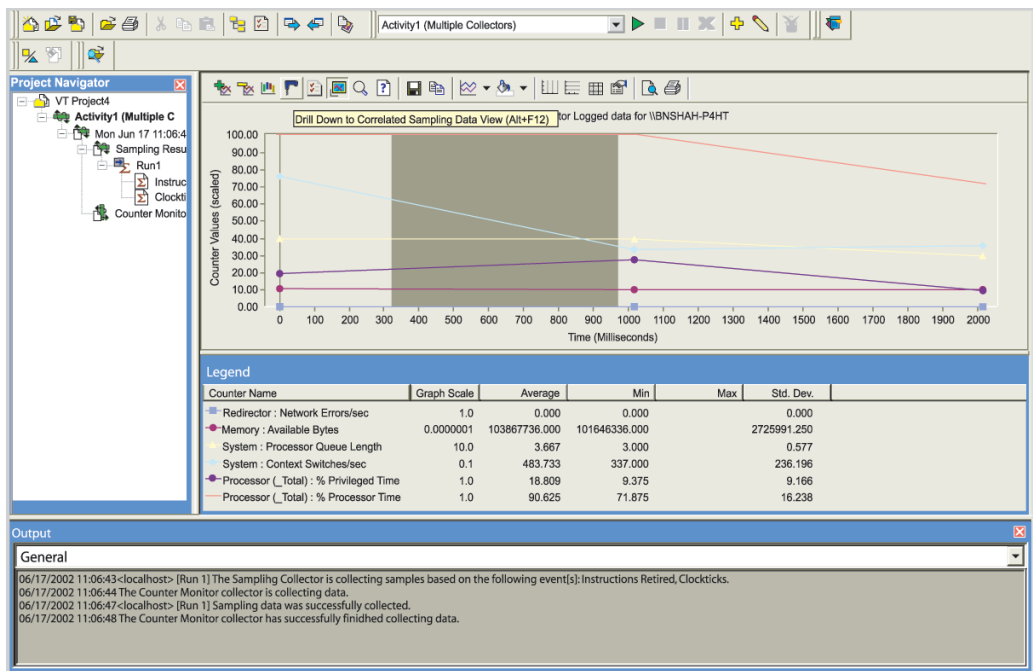


Call Graph

The Call Graph information includes:

- Number of times each function is called and which function called it
- Time spent in each function or method
- Time each function spends blocked or waiting
- Critical path through the calling hierarchy
- Functions representing the top n% of time spent, where n is user-specified.

The image to the left is a sample Call Graph. Each tree corresponds to a separate thread.



Counter Monitor

Counter Monitor allows you to view the performance of your application in real time. It can monitor any of the over 200 available operating systems counters. You can also create custom performance counters to monitor the performance of your hardware and software.

Intel Tuning Assistant

The Intel® Tuning Assistant provides valuable advice on tuning your system resources and application performance. It uses the data collected by the Intel VTune Performance Analyzer to identify performance issues and provide tuning advice. It can interpret sampling and counter monitor data. It interprets event-based sampling data and automatically identifies performance bottlenecks in your code and provides insights and tuning advice on resolving it. It can also provide tuning advice based on C, C++, Fortran, or assembly language.

Intel® Tuning Assistant

⊞ Second level cache load misses: 0.06 sec

Characterization data

- Instructions Retired: 4.488709e+009 Events
- System bus utilization: 0.51%

deflate (RVA: 0x1690-0x1994, Module: gzip.exe, Process: gzip.exe)
Clockticks: 1.542960e+009

Significant coding pitfalls

⊞ 64k Aliasing: 0.57 sec

Characterization data

- Instructions Retired: 1.164863e+009 Events
- System bus utilization: 0.48%

longest_match (RVA: 0x1440-0x158f, Module: gzip.exe, Process: gzip.exe)
Clockticks: 1.541168e+009

Significant coding pitfalls

⊞ 64k Aliasing: 0.58 sec

Other possible problems

⊞ Second level cache load misses: 0.05 sec

Multi-Threading Support

You can view sampling data or call graph data for multiple threads simultaneously or isolate specific threads or processors in your displays. With the latest version of the VTune Performance Analyzer, this support includes visibility into the threads running on Intel processors with Hyper-Threading Technology.

Remote Data Collection

The VTune Performance Analyzer collects performance data from a remote machine by using a lightweight and low-overhead remote agent. You can configure, start, and stop a remote machine's profiling data collection session from a host machine and then import the data into VTune Performance Analyzer on the host system. The remote data collector works on Windows* operating systems.

Performance

The Intel VTune Performance Analyzer offers insight into your system, application, and microarchitecture-level performance bottlenecks through a rich set of views.

Compatibility

Work with the tools you know and like. Whether you program in Fortran, C #, or C/C++, the VTune Performance Analyzer can help you optimize the output. The analyzer supports Microsoft Visual Studio, Intel C/C++ and Fortran compilers, Compaq Visual Fortran, Borland Compilers (Delphi*, C++ Builder), and IBM Visual Age*.

Support

The VTune Performance Analyzer includes Intel Premier Support. With this, you get customer support, access to updates for the year following your purchase, and access to Premier Support renewal pricing. Our customer support is receiving accolades in the industry. It's something best experienced — try the VTune Performance Analyzer (evaluation copies are available from the Intel Web site) and be sure to register for Premier support. With a variety of resources available to developers, support from Intel is a lot more than just update releases.

System Recommendations

Refer to the Intel Software Development Products Web site for details on system recommendations for VTune Performance Analyzer. www.intel.com/software/products

Intel provides both the tools and support to enhance the performance, functionality and efficiency of software applications. Compatible with leading Windows* and Linux* development environments, Intel Software Development Products are the fastest and easiest way to maximize the latest features of Intel processors. Designed for use in the full development cycle, Intel software products include Intel Performance Libraries, Intel Compilers (C++ and Fortran, for Windows), Intel® VTune™ Performance Analyzer. Performance depends upon the specific computer systems, components and/or measurement methods used; your results will vary.

**Performance.
Compatibility.
Support.**

For additional product information visit: www.intel.com/software/products



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